SECTION D DETERMINATION
CATEGORICAL EXCLUSION (CX) DETERMINATION - RFO/CX 000-92

Proposed Action Site Characterization for OUs 3 4 and 9

Location Rocky Flats Plant Golden CO

Proposed by U S Department of Energy Rocky Flats Office (RFO)

Description of the proposed action

In 1992 the Department of Energy (DOE) will initiate site characterization work in Operable Unit (OU) 3 (Offsite Areas) OU 4 (Solar Evaporation Ponds) and OU 9 (Original Process Waste Lines) at the Rocky Flats Plant (RFP) north of Golden CO The location of RFP is shown in Figure 1 Site characterization involves the collection of surface water ground water soil sediment and air samples to identify the nature and extent of contamination In addition field surveys and sampling of terrestrial and aquatic biota will be conducted The work will be undertaken pursuant to the provisions of the Comprehensive Environmental Response Compensation and Liability Act and the Resource Conservation and Recovery Act and is an integral part of DOE s program to remediate contamination at RFP Site characterization work in OUs 3 4 and 9 will start in January 1992 The OU 4 and OU 9 efforts are Phase I characterizations Phase 2 work will start in 1994 and 1995 respectively and will be the subject of separate NEPA documentation Most of the work will take place during 1992 but as described below some will occur during 1993 and particularly in OU 4 some could take place after 1993

Site characterization work occur both on plantsite (OUs 4 and 9) and off (OU 3) Certain site characterization activities will be common to more than one OU They are

Soil sampling at depth by drilling boreholes Drilling involves driving a drilling rig to the designated site and drilling the hole typically within a day Boreholes are characteristically 4 to 6 inches in diameter and 15 to 60 feet deep though some may be deeper In borehole drilling a hollow stem auger produces a core of soil and/or rock which is preserved for analysis and drill cuttings which are shoveled into drums pending analysis for contaminants storage treatment and ultimate disposal. When drilling is completed surface evidence of the activity is downed vegetation around the immediate site and a 6 inch pipe extending 2 to 3 feet above the ground After being drilled as a borehole, some boreholes will be modified to become monitoring wells by the installation of well screens and casing When they have served their purpose, the boreholes will be abandoned in accordance with RFP standard operating procedures (plugging and capping) Some boreholes will be drilled in floodplains but because of the very low impact of drilling and its short duration it is not expected to have any adverse floodplain affects

Ground water sampling involving use of new and existing monitoring wells To obtain a ground water sample a collection device is lowered into a well where it fills with water The device is pulled to the surface and the water is poured into another container Drilling new wells is similar to drilling boreholes except that core may or may not be produced As the drill bit advances cuttings are shoveled into drums pending analysis of any contaminants, storage treatment and ultimate disposal Wells are characteristically 6 inches in diameter and 15 to 60 feet deep, though some may be deeper Once the well is in place, screens and a casing are installed to ensure the integrity of the well and enable the well to draw water from the intended depths Surface evidence of the drilling activity is downed vegetation around the immediate site and a 6 inch pipe extending 2 to 3 feet above the ground As described above some holes drilled initially as boreholes may be used later as groundwater monitoring wells When they have served their purpose the wells will be abandoned in accordance with RFP standard operating procedures (plugging and capping) Some new ground water monitoring wells may be located in floodplains but, because of the very low impact of the drilling activity and its short duration it is not expected to have any adverse affects to floodplains

Flora and fauna sampling using standard collection techniques e g vegetative clipping live animal trapping and field surveys These activities will typically continue for 1 year at each OU Collection of flora and fauna samples will take place in floodplains but because of the very non-invasive character of this activity it is not expected to have any adverse floodplain impacts

The specific sampling proposed for each OU is described in the following paragraphs and shown in the accompanying maps In viewing the maps, it should be noted that all locations shown are approximate, and the location shown on a map for any given activity may be modified to meet field conditions or technical requirements In addition sites may be added or deleted as field or technical circumstances require Samples collected in the field will be taken to onsite or offsite laboratories for analysis In addition to the sampling activities described above, other site characterization activities unique to individual OUs are described below in the appropriate OU section

Operable Unit 3 - Offsite Areas

OU 3 includes various lands off the RFP site immediately to the east of the Plant s buffer zone as shown in Figure 2 Figures 3 through 7 show the locations of the various site characterization activities

Figure 3 shows by the 11 triangles highlighted by arrows, approximately where vertical soil profile trenches are planned Vertical soil profile sampling involves using a backhoe to dig a trench that is up to approximately 9 feet long, 5 feet wide and 4 feet deep Eleven samples will be collected from various depths in each trench One of these trenches is typically dug and filled within a day The soil removed from the trench will be used to backfill it Six trenches could be in floodplains but, because of the short duration and character of this activity, it is not expected to have any adverse impacts to floodplains

Figure 4 presents the general locations of the planned soil scrapes Twenty-five scrapes will be taken in the vicinity of each of the dots on the map. Surface soil scrapes are taken with a small, hand-held device which collects 2 to 3 tablespoons of soil from the top one-quarter inch of the ground. Scrapes will generally be taken on a grid pattern within various plots shown in Figure 4 Virtually any of the soil scrapes has the potential to be taken from within a floodplain No adverse impacts on floodplains are expected because of the very non-invasive character of the taking of soil scrapes

Sediment sampling locations are shown in Figure 5 Sediment sampling involves single or repeated visits to sampling stations to collect up to a few pounds of sediments Both new and existing sampling stations will be used A new sediment sampling station is established by driving a metal fence post into the ground to mark a site which can be returned to in the future Some of the sediment sampling stations will be located on streams or ditches while others will be located on the shores, or under the waters, of ponds lakes or reservoirs Vertical sediment profile samples will be taken from reservoir bottoms by dropping a tube through the water into the sediment. The bottom of the tube closes and up to 3 feet of sediment can be withdrawn for analysis Sediment grab samples will also be taken from reservoir bottoms, but include only the top 2 to 3 inches of sediment By their nature, all sediment sampling stations and sample collection activities will be in floodplains. Because of the non-invasive character of this activity, it is not expected to have any adverse impacts on floodplains

Figure 6 indicates the locations of surface water sampling sites Surface water sampling involves single or repeated visits to sampling locations to gather up to a few quarts or gallons of water Both new and existing sampling stations will be used. A new surface water sampling station is established by driving a metal fence post into the ground to mark a site which can be returned to in the future Some of the surface water sampling stations are, or will be, located on streams or ditches while others will be located on the shores or waters of ponds, lakes or reservoirs. By their nature, virtually all surface water sampling stations and sample collection activities will be in floodplains but, due to the non-invasive character of this activity, it is not expected to have any adverse floodplain impacts

Locations of existing and planned ground water monitoring wells are shown in Figure 7 Although it is difficult to see on the black-and-white map copies, Figure 7 shows an alluvial well and an Arapahoe formation well immediately downstream of both Great Western Reservoir and Standley Lake These

locations are in the floodplains of Walnut and Big Dry Creeks respectively Drilling of the four new wells is not expected to have significant adverse impacts to floodplains

Also shown in Figure 7 are the locations of air and meteorological monitoring stations Three types of air sampling and meteorological monitoring activities will occur at OU 3 One will be installation of three new high volume air samplers Two of the samplers will be located at Standley Lake while the third will be at a site to be selected in a terrestrial area north the Lake An air sampler is a piece of equipment housed in a stainless steel box approximately 2 feet on a side An air sampler is installed by pouring a concrete pad on which the air sampler is mounted and bringing electric power to the site The pad will be removed after the study is complete One of the samplers may be located within the floodplain of Standley Lake but because of the non-invasive character of this activity it is not expected to have any adverse impacts to floodplains

The second activity is installation of two new meteorological monitoring stations The locations of these stations are also shown in Figure 7 The stations are 6 meter towers on small concrete pads The towers may be fenced if necessitated by the presence of livestock or other considerations Each tower will hold instruments to measure meteorological characteristics and may be supported by guy wires One of the stations will be located with one of the air samplers in the floodplain of Standley Lake but in an area not expected to be inundated by anything other than a larger (50 or 100 year) storm event The second tower will be installed at a terrestrial site approximately a mile east of the eastern RFP boundary, north of Great Western Reservoir Installation and operation of the meteorological towers is not expected to have any adverse impacts to floodplains because of the non-invasive character of the activity

The third activity in the OU 3 air sampling program is the use of small and medium-sized portable wind tunnels to characterize and measure the ability of winds at various speeds to move sediments on and from the exposed areas of the Standley Lake bed The wind tunnel devices are mounted on a small trailer and have an open-floored test section which is placed over the surface of the lake bed to be tested Air is drawn through the test section at controlled velocities The air stream passes through a duct fitted with a filter which collects particulates raised from the lake bed by the wind The particulate samples will be sent to a laboratory to identify their volume and constituents Approximately six tests will be conducted at each of three sites in late summer when soil moisture is generally at its lowest level Each of the tests will take about one day One site will be on the bed of Standley Lake the second on the bed of Great Western Reservoir and the third on a yet-to be-identified highland site (i e not on a lake bed) south of Great Western Reservoir The first two sets of tests will necessarily take place within the floodplains of Standley Lake and Great Western Reservoir but because of their nature and short duration the tests are not expected to have any adverse impacts to floodplains

Figure 8 shows the locations of terrestrial and aquatic flora and fauna sampling All the aquatic and some terrestrial sampling locations are in floodplains but because of the non invasive nature of this activity it is not expected to result in any adverse impacts to floodplains

Operable Unit 4 - Solar Evaporation Ponds

OU 4 is located in the northeast portion of the developed area of RFP as shown in Figure 9 The Solar Ponds themselves are located inside the high-security area of RFP known as the Protected Area (PA) Figures 10 through 15 show the locations of the various sampling programs that will take place in OU 4

Two monitoring-well clusters are proposed at locations hydrologically-upgradient of the Ponds as shown in Figure 10 Each cluster will consist of three new wells one well screened in alluvial sediments the second in weathered bedrock and the third in unweathered bedrock These wells are expected to be between 15 and 60 feet deep

Figure 11 shows the locations of proposed radiological survey readings and surficial soil samples The radiological survey will consist of a surveyor taking 1 minute readings with a gamma probe (a device for measuring gamma radiation) held at about waist height at each of the approximately 350 locations shown in Figure 11 The surveyor will also take a reading of alpha radiation at the same location Alpha readings

will be obtained from eight locations on a 5 foot radius from the station with the alpha counter held 4 to 6 inches above the ground

Figure 11 also shows the locations at which approximately 35 surficial soil samples will be taken At each location, two 1 meter-square areas will be located 1 meter apart. Samples will be collected to a depth of 1 inch with either a plug-type collector or a scoop In addition to these 35 samples, surficial soil will be collected at the location of each of the four boreholes shown in Figure 12

Site characterization at OU 4 will include a program to locate two earlier ponds and any residual piping associated with them That program will take place in the mottled area shown in Figure 12 and will use ground-penetrating radar Also shown in Figure 12 are the locations of four new boreholes to be drilled in the area of the two original solar ponds These boreholes will be drilled to the depth of saturated soil or to auger refusal It is expected that the holes will be 15 to 20 feet deep Cuttings from these boreholes will be collected and analyzed for their chemical constituents as part of the effort to characterize the original solar ponds

Figure 13 presents the locations of approximately 26 new boreholes that will be drilled in and around the sites of the five existing Solar Ponds It is expected that most of these boreholes will be 15 to 20 feet deep However, some of the boreholes in the area of the existing ponds will be 40 to 60 feet deep to collect geologic information The number and location of the deeper boreholes has not yet been identified The mottled area in Figure 13 shows the area around the existing ponds that will be surveyed with ground-penetrating radar This area overlaps the area shown in Figure 12 for the original solar ponds ground penetrating radar survey

North and hydrologically-downgradient of the Solar Ponds is a system of French drains referred to as the Interceptor Trench System (ITS) The ITS was installed to collect ground water contaminated by liquids leaking from the Ponds and is shown by the dashed lines in Figure 14 A total of 19 boreholes is planned in the area of the ITS at the locations shown in Figure 14 These boreholes will be drilled to provide soil contaminant information at various distances from the Ponds, and to compare contaminant levels upgradient and downgradient of the ITS

Shallower boreholes will be 15 to 20 feet deep while others will be 40 to 60 feet deep in order better define the geology of the area Piezometers will be placed in some of the boreholes in the ITS area to provide data on ground water levels The number and location of the piezometers have not been determined

In addition to sampling soils and water, plants and animals will be sampled. Existing and proposed flora and fauna sampling locations are shown in Figure 15 These locations are tentative and subject to change as field conditions require

Not shown in any of the figures are locations of soil lysimeters for investigation of the vadose zone Soil lysimeters are devices that can collect soil moisture and soil gas samples. They can be mounted on the end of metal rods and driven into the ground, or installed by drilling small diameter holes into which a lysimeter is placed At the Solar Ponds, the rods or boreholes typically will be 1 to 3 inches in diameter and the lysimeters placed at depths of between 10 and 20 feet deep. Up to 100 lysimeters may be used in locations determined by analytical information from other boreholes in the areas of the Ponds and the ITS

Operable Unit 9 - Original Process Waste Lines

Figure 16 shows the location of OU 9, the Original Process Waste Lines (OPWL) The OPWL constitute a system of tanks and underground pipes that were used to store and carry liquid wastes from various manufacturing processes to a treatment plant at RFP, or from the treatment plant to other facilities such as the Solar Ponds Portions of the OPWL are included in the current process waste transfer system, but most of the system was replaced and abandoned prior to 1984 and is no longer in use Some of the lines shown in Figure 16 are in or under production buildings These sections will not be investigated at this time Because the OPWL is a group of underground linear features much of which was constructed over 30 years ago and because documentation of the lines is very incomplete site characterization efforts at

three boreholes will therefore be concentrated in the previously-excavated areas but will also be located around contaminated sites to delimit the spread of contamination These boreholes like the stage two boreholes will typically be 15 to 20 feet deep or to the water table whichever is intercepted first The number of boreholes will depend on the number of contaminated sites identified and the horizontal extent of the contamination Because of the "tight" nature of the native soils it is expected that individual sites will not extend much more than 10 feet on either side of a pipeline or 20 feet away from the area of a tank Such boreholes will probably be on 10 to 20 foot spacings depending on the specifics of the situation

As seen in Figure 18 two pipeline segments may extend east of the PA One is believed to go only the short distance to the sewage treatment plant near South Walnut Creek. The other originally laid on the surface may be partially or totally removed It is believed that this line extended as far as Pond B-2 2000-2500 feet east of the PA fence Test pits and/or soil samples may be taken probably on 200-foot centers along these lines to confirm their existence and sample for the possibility of contamination along their alignments It is possible that the lower portions of either or both these lines lie within a floodplain and that some of the test pits and soil sampling sites will also be in those floodplains

The site characterization program at OU 9 will also include sampling and field surveys of flora and fauna in the OU Because of its location in the developed portion of RFP much of OU 9 is covered by pavement or buildings so habitat is limited Figure 18 however identifies eight sites mostly on the fringes of the OU and the developed area where habitat exists and biota investigations are planned

The action falls within the categorical exclusion for

> "Site characterization and environmental monitoring including siting construction or operation of characterization and monitoring devices under CERCLA and RCRA, if the activities would not adversely affect environmentally sensitive areas "

I have determined that the proposed action meets the requirements for the CX as defined in Section D of DOE NEPA Guidelines Therefore I approve the categorical exclusion of the proposed action from further NEPA review and documentation

Approval _____ Date _____

Leo P Duffy Director
Office of Environmental Restoration and
Waste Management

EH-25 has reviewed this determination and has no objection

this time will consist chiefly of digging test pits and drilling boreholes to determine where leaks might have occurred Figure 17 shows the proposed locations of the initial test pits (denoted by a small square)

The OPWL site characterization program will be divided into two parts one will look at pipelines and the second will look at tanks Both investigations will use mechanical (e g backhoe) and hand-held (e g shovel) equipment to dig pits to the depths necessary to provide for physical and visual access to the lines The pipelines are believed to be between 3 and 8 feet deep The first stage of the pipeline investigation is planned to include pits at the locations shown in Figure 17 and at additional undetermined locations The locations identified Figure 17 are the sites of pipeline endpoints or known structural features - points where leakage is most likely to have occurred. Additional test pits will be excavated at intervals not greater than 200 feet throughout the OPWL system It is anticipated that data compilation activities will identify the general or even exact locations of historic releases (leaks) pits will be excavated at these locations Where releases are believed to have occurred but the exact location is not evident from the record or where visual inspection reveals instances of poor pipeline integrity or other indications of potential leakage test pits will be no more than 100-feet apart

Typically an individual test pit will be excavated so that soil samples can be taken at the surface prior to excavation in the original trench backfill directly below the pipe and in native soil below the pipe and the backfill Thus, based on expected conditions the deepest test pit should be 11 to 12 feet deep Where practical samples of residues in the pipe will be collected by gaining pipeline entry at existing openings or by cutting pipes Inside-surface radiological dose-rate measurements will be taken by inserting a low-energy gamma probe radiation detector into the pipeline New openings will be grouted closed after taking the residue sample Pipeline sections located beneath the water table will not be opened Pipeline locating devices may be used as necessary

The second stage of the pipeline investigation will be based on the analytical results of the first stage and will use soil borings Borings will be made on 5 and 20 foot spacings between test pits at which contaminated soils were found The spacing pattern will depend on whether adjacent test pits also contain contaminated soil Boreholes will be drilled to bedrock or the water table, whichever is shallower, with a continuous core produced to that depth Samples will be taken from up to five different locations on the core

The first stage of the tank investigation will sample the tanks identified in Figure 17 (Tanks are indicated by the letter "T" followed by two numerals indicating a circular feature Tanks indicated by a square will not be investigated as part of the current study.) Generally these are OPWL tanks that are no longer in use and are not located in or under production buildings During the course of the investigation additional tanks may be identified for study Tanks will be inspected visually and by residue sampling and soil borings Visual inspections will be done remotely (e.g., by lowering a camera into the tank) where possible Residue or wipe samples will be taken at tanks which have not been cleaned and painted since their use was discontinued Soil borings will be drilled at all accessible tank locations, i.e , on all sides of each tank that can be reached by a drilling rig. Specific boring locations at each tank will focus on known or suspected leak locations at that tank. Soil samples will be taken at the surface prior to drilling, midway between the surface and the water table or bedrock, whichever is encountered first, and directly above the water table or bedrock, whichever is encountered first

The second stage of the tank investigation will provide more detailed information about the tanks identified in the first stage as having leaked. Additional soil borings will be taken on a grid pattern around the tanks to delineate the extent of contamination in soils Because each situation is expected to be unique sampling patterns will be developed on a case by case basis The second-stage soil borings may identify areas which require further characterization of soil contamination. The extent of such activities is not known, but would probably involve additional soil borings and/or excavation

The need for a third investigative stage for pipelines and/or tanks will be determined by the outcome of the first two stages It is anticipated that additional boreholes will be drilled in and around pipeline and tank locations where contamination was identified in the preceding stages Leaked material is expected to have concentrated in the sand and gravel used to backfill the pipeline and tank excavations because those materials accept liquids much more readily than the "tighter" native soil surrounding them. Stage